

CLAIMS

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1. A process for preparing an unsaturated carboxylic acid anhydride, comprising:
reacting an unsaturated carboxylic acid and a lower aliphatic carboxylic acid
anhydride in the presence of:
a catalyst; and
a stabilizer.

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2. The process according to claim 1, wherein said catalyst comprises a metal salt.

3. The process according to claim 1, wherein said catalyst comprises a metal salt and
said metal salt comprises at least one cation selected from the group consisting of Cr, Zn, Cu,
10 Ca, Zr, Ti, Na, La, Hf, and mixtures thereof.

4. The process according to claim 1, wherein said catalyst comprises a metal salt and
said metal salt comprises an anionic organic compound which has at least one carboxyl
group.

15 5. The process according to claim 1, wherein said catalyst comprises a metal salt and
said metal salt comprises an anionic organic compound which has at least one group selected
from the group consisting of carboxylic acid, dicarboxylic acid, beta-ketocarboxylic acid,
beta-diketone and mixtures thereof.

6. The process according to claim 1, wherein said catalyst is selected from the group consisting of chromium acetate, zirconium acetylacetonate, titanium acetylacetonate and mixtures thereof.

7. The process according to claim 1, wherein the unsaturated carboxylic acid anhydride is methacrylic anhydride.

8. The process according to claim 1, wherein the lower aliphatic carboxylic acid anhydride is acetic acid anhydride.

9. The process according to claim 1, wherein the unsaturated carboxylic acid is methacrylic acid.

10. The process according to claim 1, wherein the stabilizer is selected from the group consisting of hydroquinone, hydroquinone monomethyl ether, topanol O, topanol A, phenothiazine, N,N'-diphenyl-p-phenylene diamine, and a mixture thereof.

11. The process according to claim 1, further comprising distilling the unsaturated carboxylic acid anhydride.

12. The process according to claim 1, further comprising separating the catalyst from the unsaturated carboxylic acid anhydride.

13. The process according to claim 1, wherein a molar ratio of the carboxylic acid anhydride to the unsaturated carboxylic acid ranges from 0.5 to 1.

14. The process according to claim 1, wherein a molar ratio of the carboxylic acid anhydride to the unsaturated carboxylic acid ranges from 0.55 to 0.65.

5 15. A process for preparing methacrylic anhydride, comprising:
reacting methacrylic acid and acetic anhydride in the presence of:
a catalyst; and
a stabilizer.

10 16. The process according to claim 15, wherein said catalyst comprises a metal salt and said metal salt comprises at least one cation selected from the group consisting of Cr, Zn, Cu, Ca, Zr, Ti, Na, La, Hf, and mixtures thereof

17. The process according to claim 15, wherein said catalyst comprises a metal salt and said metal salt comprises an anionic organic compound which has at least one carboxyl group.

15 18. The process according to claim 15, wherein said catalyst comprises a metal salt and said metal salt comprises an anionic organic compound which has at least one group selected from the group consisting of carboxylic acid, dicarboxylic acid, beta-ketocarboxylic acid, beta-diketone and mixtures thereof.

~~19. The process according to claim 15, wherein said catalyst consists essentially of chromium acetate, zirconium acetylacetonate, and mixtures thereof.~~

~~20. The process according to claim 15, wherein the stabilizer consists essentially of hydroquinone, hydroquinone monomethyl ether, thiadiazine, N,N'-diphenyl-p-phenylene diamine, and a mixture thereof.~~

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